Modern Refrigeration & Air Control

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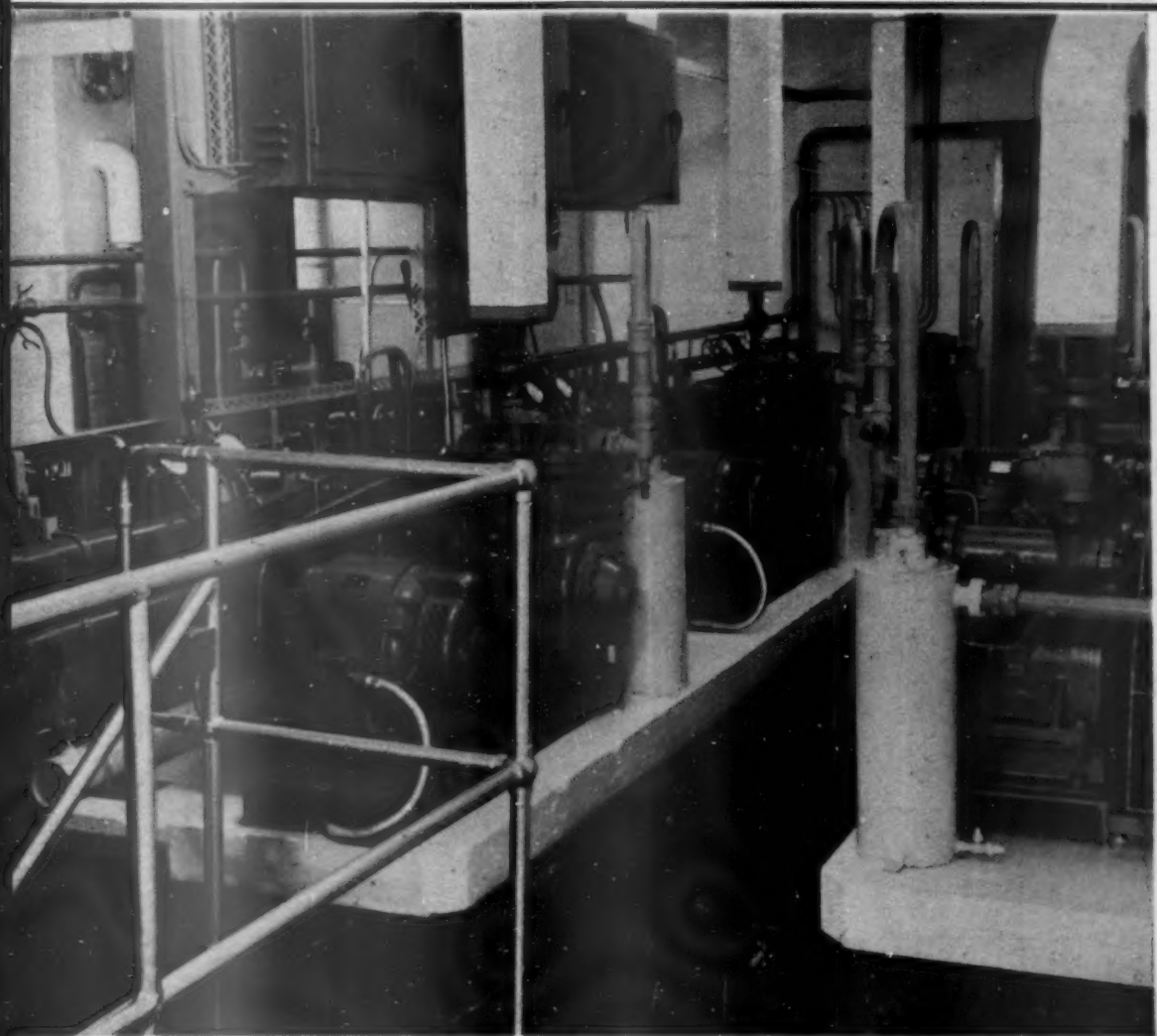

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MODERN REFRIGERATION - SMALL ADVERTISEMENTS.

SITUATIONS VACANT

APPLICATIONS are invited for the position of Sales Manager of the Commercial Refrigeration Dept. of Aish & Co. Ltd. (Frigidaire Distributors). Sound knowledge of Refrigeration Plant up to 10 h.p. and wide sales experience in this field essential. Write giving fullest details of experience, age, and salary required. Vanguard Works, Poole, Dorset. 1280

APPLICATION Sales Engineer required by progressive Company established 1890. Main distributors for York Shipley for Hampshire & Dorset. A position with excellent prospects in one of England's most favoured towns for a man of ability possessing initiative and enthusiasm. Please give details of past experience and state salary required in confidence to the Managing Director, Scott & Scott Ltd., 91 Poole Road, Westbourne, Bournemouth. 1282

DRAUGHTSMAN. Vacancy for an experienced man with knowledge of Refrigeration. Permanent position. Pension scheme in operation. Canteen. Good working conditions. Expenses paid for interview. - Wm. Douglas & Sons Ltd., Douglas Wharf, Putney, S.W.15. 1094

DRAUGHTSMAN required, with knowledge of sheet metal work as applied to domestic appliances, for attachment to Research and Development Department in Smethwick. First class man required with possibility of promotion to section leader. Excellent working conditions. Five day week. Canteen. Write to: Chief Engineer, Allied Ironfounders Ltd., Mafeking Road, Smethwick, Staffs. 1273

ESTIMATOR required by "J.D." INSULATING CO.LTD. for their Southampton Branch, capable of estimating for Sectional and Built-In Cold Rooms, without supervision. Pension Scheme available. Holiday arrangements honoured. Reply with copy references stating age, experience and salary required to: The Secretary, 486, Hawthorne Rd., Bootle, Liverpool, 20. 1287

EXPERIENCED Applications Engineer to take charge of Technical Department as from November this year. This calls for considerable practical and theoretical knowledge of Freon plant for commercial installations, together with D.O., estimating experience, and the preparation of specifications. Technical education to at least H.N.C. and preferably apprentice trained. 30/40 age group. Salary commensurate with experience; five day week and non-contributary pension scheme. Write in confidence Managing Director giving full career details - Metropolitan Refrigeration Ltd., 73 Charterhouse St., London, E.C.1. 1283

EXPERIENCED service and installation engineers required for posts in London and South Essex area. Freon range of commercial equipment up to 15 h.p. Top rates of pay and guaranteed 44-hour week with generous overtime. Write Service Manager, Metropolitan Refrigeration Ltd., 73 Charterhouse St., London, E.C.1. 1284

JUNIOR Draughtsman required, apply in writing, stating age, experience and salary required to Aero Pipe & Glass Co.Ltd., Harlesden Road, Willesden, N.W.10. 1277

MANAGER required for refrigeration business holding premier manufacturing distributor-ship, able to direct salesman, staff 10 in number. Apply Box 1272. 1272

REFRIGERATION Engineer (qualified) required by light engineering Company, South-West Middlesex area. It is essential that applicants have experience of the small domestic cabinet and display counters. Knowledge of large refrigeration plants an advantage. The duties of this position will be to advise the Sales Department on the application of controls to such equipment. Please write stating full details of previous experience, age and salary required to Box 1285. 1285

REFRIGERATION Engineers required for erection and maintenance of Industrial Freon Refrigeration Plant of our own manufacture. Range 3 - 50 TR. Permanent Salaried position - Top Salaries paid with additional Efficiency Bonus paid every three months. Transport supplied. In first instance apply in writing, or by telephone (Tel. No: Molesey 4406) for an interview, stating experience and age to Alfred Porter & Co.Ltd., Stella Works, Stanley Road, Teddington, Middx. 1281

REFRIGERATION Service Engineer required by Kelvinator distributor south coast area. Must be fully experienced. Excellent prospects, pension scheme, pleasant territory. Apply with full details to Cool-Rite Ltd., Kelvinator House, Poole Road, Westbourne, Bournemouth. 1258

REFRIGERATION Service Engineer conversant with equipment up to 10 h.p. Able to drive. Top rate experienced man. Permanent position. Apply in writing or telephone Winchester 2281 for appointment. Dicks Ltd., 149 High Street, Winchester. 1270

REQUIRED. Service Manager. Hampshire. Conversant with service work on all types of compressors, used to handling men and equipment, good organiser. Excellent and progressive post for right man. Apply Director. Box 1271. 1271

SERVICE Engineer, Surrey area. Applicant fully experienced, preferably with own transport. Good prospects. - Universal Cooler Ltd., 8 West Street, Dorking. Telephone: Dorking 4555. 1250

SITUATIONS WANTED

REFRIGERATION and Air Conditioning Engineer, Age 38. Previous experience West Africa. Seeks post abroad, apprentice trained. 1st Class electrical background. Installation service, sales. Not afraid of hard work. Married, no children. Box 1286. 1286

REFRIGERATION Engineer fully experienced with all small plants would join another in any district. Own tools and equipment. Capital available. Box 1274. 1274

SALES MANAGER 39, 10 yrs. present Company desires change to position with Manufacturer/Distributor

cont'd.

offering worth while career. At present responsible to Directors only for complete sales operation. Able to implement and pursue progressive sales policy. Sound knowledge insulation and sales engineering up to 10 h.p. Present salary £1750 but nature of job more important than immediate increase. Home or abroad. Genuine replies only please in confidence. Box 1278. 1278

ARTICLES WANTED

READER wishes to purchase three back numbers of British Cold Storage and Ice Association Proceedings: Vol. XVI, No. 1; Vol. XXI, No. 2; and Vol. XXII, No. 1. Kindly reply to Box 1202. 1202

SERVICE Engineer wishes to purchase two B.A.R. pre-war Model F.2 Compressor Bodies, complete with fly wheels and suction discharge shut off valves. Condition of motion work immaterial. Box 1279. 1279

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COMPRESSOR, "Freon-12", "HALL" Compound, 14¾ in. x 8 in. x 7 in. x 8 in. twin, unused 400 r.p.m. suitable up to 216,000 B.t.u./h - Burleigh, Alpine Works, Empire Way, Wembley, Middx. 1245

LIGHTFOOT "Freon" Compressors, Type VT7, 4¾ in. x 4¾ in. Twin Cyl. 550/600 r.p.m. Three for disposal, unused. Low price for quick sale. - Burleigh, Alpine Works, Empire Way, Wembley, Middx. 1246

REFRIGERATION COMPRESSORS. Several two-stage by Hall and Sterne's, complete motors. Several 6 in. x 6 in., by Hall, Sterne's, Lightfoot; 5 in. x 5 in. Hall, York, G. & J. Weir; 4 in. x 4 in., York, Hall, Sterne's, Weir, Lightfoot, "Freon" VT7 10 h.p. and 7½ h.p., also 3, 4, 5 and 7½ h.p. "Freon" Compressors by Sterne's, York, Hall, etc. Large stockists. Keenest prices in the trade. Export orders receive special attention. Send in your enquiries. - Alfred's Ices (1954) Ltd., 1-5 Hall Place, Church Street, London, W.2. Telephone: PADdington 6619/6610. Telegrams: ICEFRIGO LONDON, W.2. 830

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WEST AFRICA Refrigeration Service Concern open for Agencies, Sales and Contracts for Installations, Maintenance of all types of Domestic, Commercial Industrial and Marine Refrigeration and Air-Conditioning. Highly skilled and experienced Staff and Management. Write Box 1289

BUSINESS OPPORTUNITIES

REFRIGERATION Company with Offices, Workshop, Stores, Service Vans, Sales Representatives and Engineers, invite Manufacturers or Agents who are interested in developing the London Area. We are looking for First Class Business Arrangements not necessarily in the Refrigeration field but allied to the Electrical Industry. Write in confidence to Box 1288. 1288

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REPAIRS, overhauls and general maintenance effected for the trade. Specialists in absorption and Sealed Unit Mechanisms. Old cabinets modernised including restoving, rechroming, revitreousing, etc., as necessary. - The A.C.R.E. Company, 389 Green Lanes, London, N.4. MOU 0171/2 836

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COMPRESSORS. We specialise in very short deliveries at highly competitive prices of new Ammonia and "Freon" Compressors in sizes from 7½ h.p. to 220 h.p. Enquiries to G. Williams Engineering Co.Ltd., Disraeli Road, Willesden, N.W.10. ELGar 4225. 1226

COLDSPOT units, quick and efficient overhauls, guaranteed work. Crates available for transporting. - Backhouse, Westmead, Woodhall, Stanningley, Leeds. 1244

FORALL Pasteuriser Cooler. L.D. Wood. 4 gall continuous freezer. Both brand new, unused, offers invited. Box 1275. 1275

"HOMEFREEZE" ice lollie packs for domestic refrigerators and all types of aluminium ice-lolly moulds. Prices and trade discounts from the manufacturer. - R.G.Harsant, 65 New Road, Ware, Herts. 1182

INSULATED vans. Immediate delivery of new guaranteed Austin 1½ ton vans (petrol) 150 cu.ft., roller track unloading, two only. £1,035 each. tax free. Mann Egerton & Co.Ltd., Cromer Road, Norwich. Tel: 47272. 1269

NEW and unused Dual Compartment Freezer/Chiller Room for disposal. Freezer - 500 cu.ft. - insulation 6" cork. Chiller - 1500 cu.ft. - insulation 4" cork. Overall Dimensions: 26' 10" long x 10' 9" wide x 8' 11" high. Chiller fitted with hanging rails and shelves on all walls. Freezer fitted with ceiling rails and shelves. The above can be offered at a very special price and can be supplied either with or without refrigeration equipment. Can be inspected London Area. Box 1276. 1276

Precision — PLANNED SPACE - SAVING

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A MASTERPIECE *of* *Leconomy*

NEARLY **25** SQ FT OF SHELF ROOM

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Ideal for hoteliers, caterers, grocers, etc., the Lec S 13 Service Refrigerator is especially designed to take the maximum of food in the minimum of space. It has a capacity of 13 cu. ft., together with a generous ice-making and frozen food capacity. Beautifully finished in white enamel. Powered by Lec 'Silometic' sealed compressor unit with 5-year warranty —murmur-quiet and extra economical. The complete refrigerator is covered by the Lec Guarantee and free service scheme (Home Market only) for one year.

send this off today

TO LEC REFRIGERATION LTD 217 REGENT STREET W1

Please send me full details of the Lec S 13 Service Refrigerator, and other Lec commercial refrigeration equipment

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Q
A
When is a door not a door
The "MINIVEIL" air curtain permits the cold store door to remain open for prolonged periods, giving completely free passage for men and goods, with a negligible rise in store temperature. This is achieved by a controlled curtain of air over the outside of the door-opening the whole time the insulated door is open.
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MINIVEIL AIR CURTAIN
Let us help you TO PUT SOME LIGHT ON THE PROBLEMS OF
WET INSULATION
The Minikay System keeps new insulation permanently dry and dries out existing wet insulation.
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For Efficient COLD STORAGE Operation
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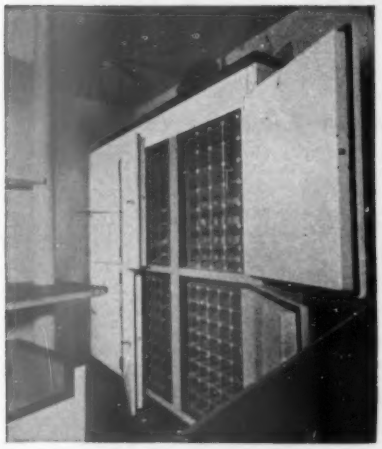
Telephone London Wall 6581

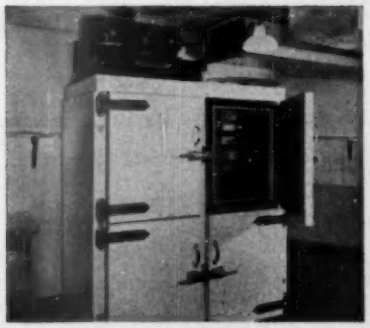
How FRIGIDAIRE helped make the Hippodrome...

Frigidaire has played an important role in converting the London Hippodrome *from top to bottom* into an up-to-date theatre-restaurant . . . "The Talk of the Town!" The extensive modern refrigeration equipment supplied incorporates no less than seventeen Frigidaire condensing units.



FRIGIDAIRE FOR THE BALCONY!

The kitchen on this floor is very fully equipped with special Frigidaire service cabinets designed for quicker, more efficient service. In the balcony bar, there is a special wine-cooling cabinet and also a standard beverage cooler.



FRIGIDAIRE ON THE GROUND FLOOR!

The kitchen on this floor—for serving diners on ground floor level—contains two standard upright service cabinets, besides a stainless steel cabinet with service compartments for cooling salads, hors d'oeuvres, smoked salmon, ice cream, etc. The bar on this floor, too, is equipped with a special wine-cooling cabinet.

FRIGIDAIRE FOR THE BASEMENT!

Here there are two meat cold rooms of 650 and 370 cu. ft. Adjoining these, there is a 20 cu. ft. fish cabinet and a 45 cu. ft. low-temperature cabinet for confectionery products and ice cream.

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FRIGIDAIRE means business—for you!

Regd. T.M.

FRIGIDAIRE DIVISION OF GENERAL MOTORS LIMITED, STAG LANE, KINGSBURY, LONDON, N.W.9

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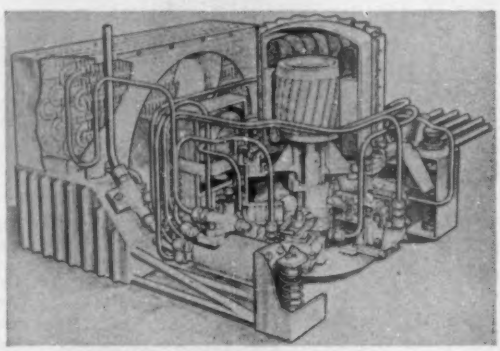
A universal Serviceable *Sealed Unit*

with UNIQUE *features*

- ★ LOWER TEMPERATURE MEANS REAL DEEP-FREEZE
- ★ OBVIATES PRE-COOLING AND SECONDARY CIRCUITS
- ★ WIDE VERSATILITY
- ★ DESIGNED FOR LONG LIFE WITH FREON 22



British Patent
UK 680922

Australian Patent
154195

U.S.A. Patent
2738122

New Zealand Patent
105246

While having the advantages of effective "Sealing" this Unit offers every facility for complete testing, maintenance or repair on the spot by ordinary Service Engineers using simple tools. Costly periods of enforced idleness are thus avoided. A special feature of the design is the interlock of main casings, giving exceptional rigidity, and long, trouble-free life. Readily adaptable to a wide variety of mountings it provides an efficient component, as original or replacement, over a large field of operation.

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THE TEDDINGTON PEOPLE—1

the men you meet

Mr. H. Birnie—London.
30 years experience

Mr. S. H. Gee—Midlands.
31 years experience

Mr. E. Mitchell—London.
4 years experience

These are the Teddington representatives — the men you meet. Their function is to give you a personal service and in particular to help you to solve your refrigeration problems. They are the right men for the job for in addition to their considerable experience and know-how, they are backed by the large design, production and experimental staff of the Teddington organisation. *Order Teddington products and get the finest instruments PLUS the finest service.*

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Mr. E. M. Smith—East & South East England.
21 years experience

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26 years experience

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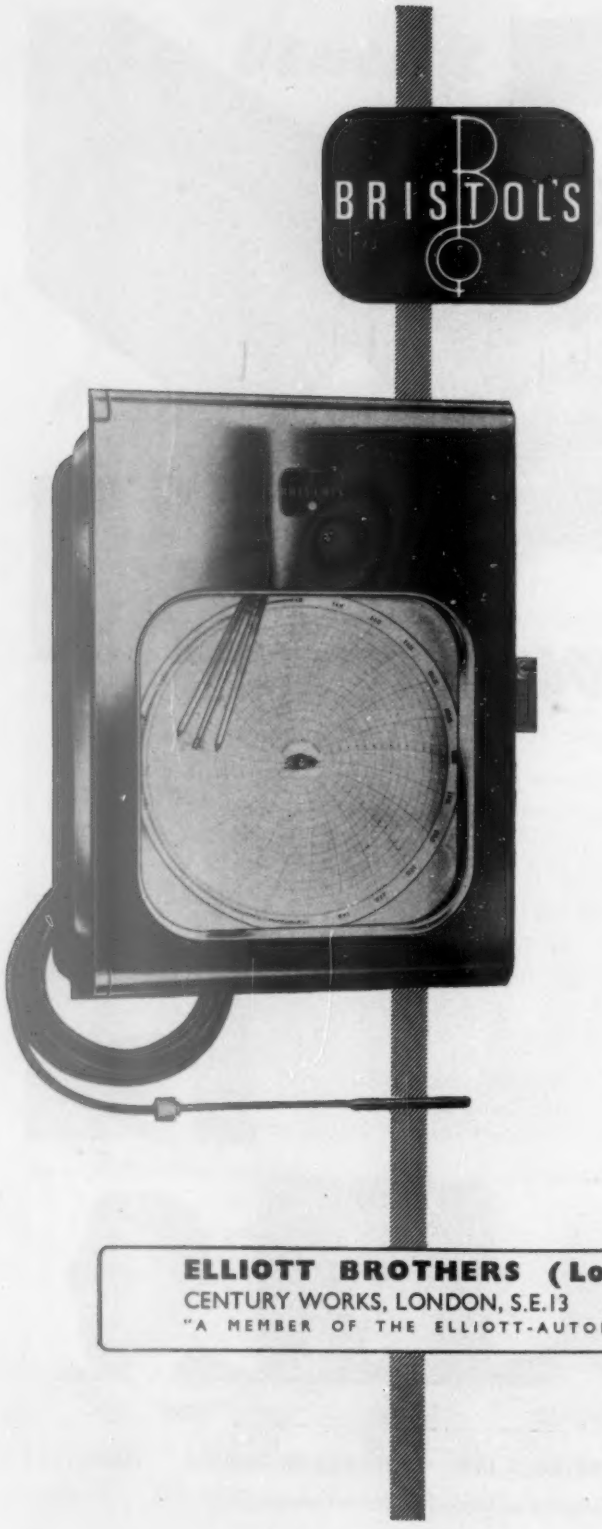

BLOOD BANK RECORDING THERMOMETERS

" A blood bank refrigerator, not equipped with a constant recording thermometer, may go off during the night because of power failure. Power is restored, but not until after the blood has become warm. The blood is recooled and the hemolysis that occurs when the red cells are brought to body temperature at the time of transfusion may not be detected unless a sample is centrifuged. Severe hemolytic reactions may therefore result."—CARL V. MOORE, M.D., The Journal of the American Medical Association.

Bristol's Blood Bank Recording Thermometers ensure

- PROTECTION AGAINST FREEZING OF BLOOD BANK due to refrigerator thermostat failure.
- A WARNING OF DANGER when the temperature deviates from the safe range.
- AN ACCURATE CHECK ON TEMPERATURES by providing a continuous record of conditions in the blood bank.

Full details on request.

ELLIOTT BROTHERS (London) LTD
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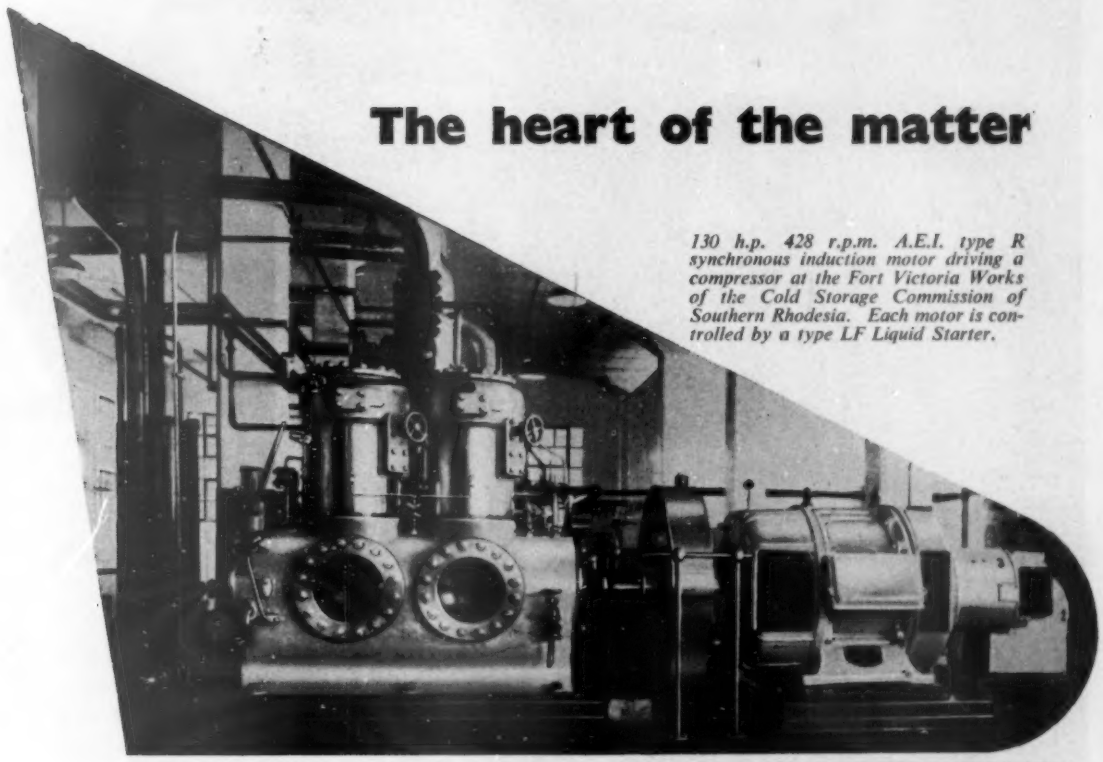
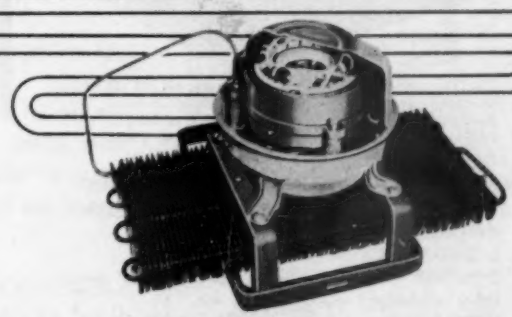
"A MEMBER OF THE ELLIOTT-AUTOMATION GROUP"

The heart of the matter



130 h.p. 428 r.p.m. A.E.I. type R synchronous induction motor driving a compressor at the Fort Victoria Works of the Cold Storage Commission of Southern Rhodesia. Each motor is controlled by a type LF Liquid Starter.

In refrigerating plant it's the motor that matters. A.E.I. motors are designed by engineers with first-hand knowledge of the refrigeration industry. They do not stop at B.S. Specifications. Maximum reliability with minimum maintenance is the specification followed. Whatever the size of refrigerating plant, it pays to install one of the range of A.E.I. motors.



An A.E.I. fractional horse power stator and rotor unit sealed into a Lec Refrigeration Ltd. refrigerator compressor.

ASSOCIATED ELECTRICAL INDUSTRIES LIMITED

MOTOR & CONTROL GEAR DIVISION RUGBY & MANCHESTER, ENGLAND

INCORPORATING THE MOTOR & CONTROL GEAR INTERESTS OF BTH & M-V

The photograph shows two compressors out of six in a two-stage installation serving a number of ice-cream hardening tunnels. The premises are those of Messrs. Nielsons (Ice Cream & Frozen Foods) Ltd., by whose courtesy this photograph is reproduced.

OTHER DOUGLAS EQUIPMENT COMPRISES:

CONDENSERS shell and tube, or evaporative.
INTERCOOLERS
LIQUID AMMONIA PUMPS
EVAPORATORS Plain pipe, finned pipe, shell and tube, submerged type, flooded, etc.
INSULATION and COLD ROOM DOORS for all cold storage and low temperature applications.

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EVERY DOUGLAS INSTALLATION MUST *SATISFY* A DOUGLAS ENGINEER

Reputation, not immensity, has been the foundation of Douglas growth, and every growing reputation depends upon reliability and experience. No less this one. That is why the most thorough care is taken with each installation—to ensure that everything is in perfect order.

Douglas experience, combined with personal service, is appreciated by a considerable number of users. Douglas can probably assist you. Why not think about it?

WILLIAM DOUGLAS & SONS LIMITED, DOUGLAS WHARF, LONDON S.W.15. – Telephone: PUTney 8181.

JUST SO

There's a job-matched Ranco Control for every domestic refrigerator

From Ranco's new Scottish factory you can obtain an S.A. control ideally matched to any domestic refrigerator. Ranco offer a wide range of basic units which, with the many accessories, mounting brackets and numerous modified versions provide every customer with a perfectly job-matched control. The S.A. series, specially designed for compact mounting within the insulation, are particularly suitable for long, trouble-free service on household refrigerators where regular servicing will be unlikely.

" S.A. 12 " CONSTANT CUT-IN CONTROL. Basically similar to the standard " S.A. " control, the "S.A.12" incorporates an additional feature for dual temperature applications. The cut-in temperature remains constant, irrespective of knob setting, the dial knob affecting the cut-out setting only.

" S.A. 19 " CONSTANT CUT-OUT CONTROL. This control is similar to the " S.A. 12," but incorporates a single pole double throw switch, providing an additional circuit for a solenoid valve if required.

Information, specifications and advice on the application of the Ranco S.A. series controls to domestic refrigerators from Ranco Ltd.

BIGGEST NAME IN SMALL CONTROLS FOR REFRIGERATION, HEATING AND AIR CONDITIONING

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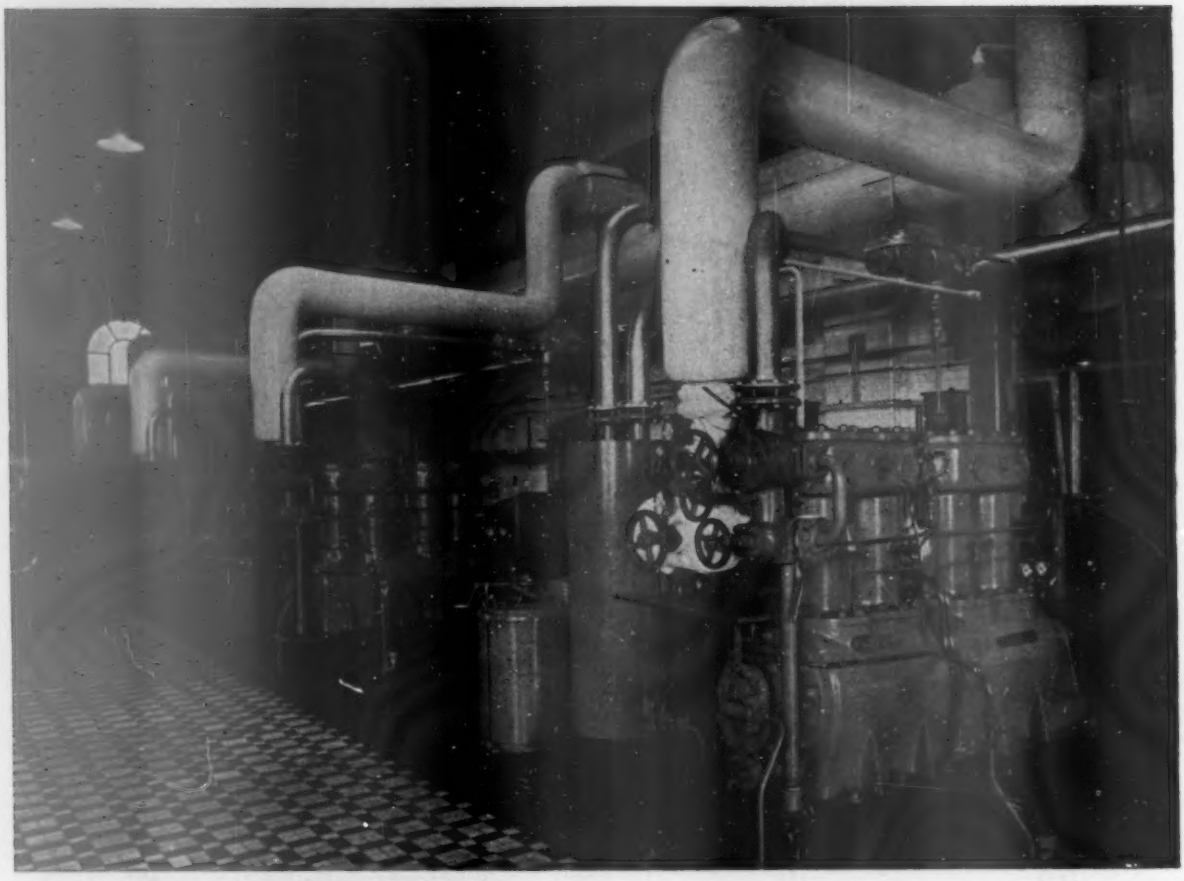

Refrigeration

Refrigerating compressors of the monobloc type are widely used in the manufacture and storage of foodstuffs. This installation comprises four 8″ x 8″ quad and an 8″ x 8″ twin monobloc compressor, driven by a total of 675 h.p., and have an installed capacity of 6½ million B.t.u. per hour. It is installed at the margarine plant of the Co-operative Wholesale Society at Irlam, Manchester. The equipment manufactured by J. & E. Hall ranges from small refrigerated cabinets and compressors of ¼ h.p. to centrifugal compressors of the largest size in use today.

J. & E. HALL LIMITED
HALLFORD
DARTFORD ENGLAND

J. & E. HALL
LIMITED
DARTFORD · KENT

MODERN REFRIGERATION

and Air Control News Vol.62. No. 736, July 1959. Maclaren House, London, S.E.1.

For the paucity of content of this issue, dictated by the present emergency in the printing industry, we apologize to readers and advertisers alike. As a recompense for our loyal supporters we can but say that it is our sincere belief that the enlarged, special issues planned for August and September will appear and thus the total editorial content published in 1959 will yet exceed that produced in 1958.

Refrigerationists in every quarter of the world will soon be leaving their native shores to attend the Xth International Congress of Refrigeration in Copenhagen (August 19-26). No effort has been spared by the Danish organizing committee to make this tenth of the four-yearly series fully up to the standard that we have all come to expect of these "internationals". On pages 642-644 will be found the first of the abstracts of the several hundred papers to be delivered in Copenhagen.

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The merger of J. and E. Hall and Thermotank details of which were given, together with the cash offer for Vent-Axia, in our last issue, was approved last month by shareholders of the former company at an extra-ordinary meeting. The board of Hall-Thermotank is now constituted as follows: Mr.Iain M.Stewart (executive chairman), Mr.J.F.E.d'A.Willis (executive deputy chairman), Mr. J.D.Farmer, Mr. A.Greenfield, Mr. W.S.Hayes, Mr. F.McPherson and Mr. J.K.W.MacVicar. Lord Dudley Gordon has been appointed president.

The sales of electric refrigerators by area boards during April were 15,747, an increase of 219 per cent. on the corresponding month last year. The sales in the 12 months to April 30, 1959, were 93,491, an increase of 80 per cent.

Shell Chemical announced last month a reorganization of the company which reflects the growth of the market for its industrial chemicals and of its agricultural outlets. At the same time the structural changes prepare for the company's expansion in the field of plastics. Alongside the already existing agricultural division, two new divisions are being created, one for plastics and one for industrial chemicals.

The Lightfoot Refrigeration Company Limited, as we go to press, is due to hold an extra-ordinary general meeting at the Piccadilly Hotel, London, to authorize an increase in the company's capital; at the same time, the opportunity is being taken to propose that the share capital be reorganized by consolidating the two existing classes of shares into ordinary capital and sub-dividing all the shares into ordinary shares of 5s. each.

Members of the Wholesale Ice Cream Federation are co-operating, together with the Butter Information Council and the Milk Marketing Board,in an intensive press campaign, beginning this month, to promote the sales of dairy ice cream. Over the next three months large advertisements will appear in the national press. The new campaign will emphasize the dairy ingredients, as, under the regulations which come into force in September, only ice cream made with butter, or cream and butter may be described as "dairy ice cream."

The 1959 Cryogenic Engineering Conference will be held on September 2,3 and 4,1959, at the University of California. Plans are now being carefully laid to assure all delegates a comfortable and enjoyable meeting. Technical papers and discussions will deal with engineering research and development at very low temperatures. The following topics are planned (others will be added if desired): (a) Cryogenic processes - liquefaction cycles, purification of gases, gas separation, distillation, heat transfer, catalysis, fluid flow, absorption; (b) Cryogenic applications - Lox production, cryogenic fuels, oxidants, pressurants and missile problems; (c) Cryogenic equipment - liquid level probes, pumps, bearings, transfer lines, dewars, cryostats, temperature and pressure measuring devices, expansion engines and turbines, heat exchangers, regenerators; (d) Cryogenic properties - mechanical, electrical, thermal, vacuum insulation, powder insulation, safety, friction studies, vapour-liquid equilibria.

THE FULLY AIR-CONDITIONED "ARCADIA"

The refrigerating plant dealing with air-conditioning duty aboard the refitted P. & O. liner "Arcadia" is the largest in the British mercantile marine - it is capable of extracting 16m.B.t.u. per hour.

The air-conditioning system aboard this 30,000-ton vessel was designed and manufactured by Thermotank Limited of Glasgow and "M.R." had the opportunity of inspecting it the day before the ship left on a Mediterranean Cruise.

A total of forty-five new central air-conditioning units has been fitted in association with the existing accommodation supply fans and ducting. These units, made-to-measure for the space available, supply a total of 342,000 cu.ft. of cooled air per minute - equivalent to moving 680 tons of air an hour. The temperature and humidity of the conditioned air supplied by the central units is regulated by automatic controls sited in various zones of the ship. This ensures that, although demand for cooling varies from one part of the ship to another, a uniform standard of comfort is maintained. The air is distributed by Thermotank 'D' type punkah louvres. This type of louvre enables the passengers to regulate the amount of air entering his cabin and to introduce it in either a diffused or a concentrated stream according to individual taste. Constant volume of air supply is maintained by an automatic pressure control. This system prevents a build-up of air pressure, with any resultant noise and discomfort, when a number of louvres are closed by passengers. In maximum tropical conditions up to 100 tons of water will be extracted every day from the atmospheric air before it is circulated through the ship. In cold weather, the air is heated by circulating warm brine to the same heat exchangers which are used for cooling. The brine is heated by calorifiers fitted in association with the refrigerating plant. Thermotank viscous-type air filters have been incorporated in all main air-conditioning units.

Four new fans, each with a capacity of 15,000 cu. ft. of air per minute, will ventilate the new refrigerating machinery spaces. The additional refrigerating load, which is provided by equipment manufactured by J. & E. Hall Ltd. Dartford, is approximately 11,000,000 B.t.u per hour. With the existing air-conditioning air system, this makes a total of 16,000,000 B.t.u per hour available to provide air-conditioning for every passenger and member of the crew. This additional machinery consists of six turbo driven "Arcton-6" compressors 225 B.h.p. each with ancillary equipment, two sets being positioned forward of the refrigerating machinery compartment in a new refrigerating machinery room in part of No.3 hold and four sets placed aft in part of No.5 hold.

The original equipment was described by "M.R." in 1953.

The complete refit was carried out by Harland & Wolff's in 10 weeks.

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DECK-MOUNTED AIR-CONDITIONERS

The new Norris air-conditioning unit for deck-mounting has been redesigned in the light of experience gained since 1953, when Norris first pioneered this system for ships in service which had a system of mechanical heating and ventilating and required air-conditioning. One special feature is that the refrigeration compressor and the air cooler are mounted on an integral base supported on special vibro insulators to reduce to a minimum the transfer of mechanical noise through to the deck. This arrangement minimizes the chance of fracture on the gas and liquid lines. The Norris unit is designed to be used in conjunction with normal heating and ventilating units either already existing on board the vessel or supplied in conjunction with them on a new installation. The air-conditioning unit is connected to the heating and ventilating unit by means of heavy gauge trunking whilst various sizes of compressors can be fitted in each unit to extract up to a maximum of 250,000 B.t.u. per hour. The units are designed to be operated on 25 % fresh air and 75% recirculation. They are capable of providing a high degree of comfort cooling, the actual internal temperatures obtained being directly related to heat ingains, sun effect, etc. The units can be provided with or without air filters.

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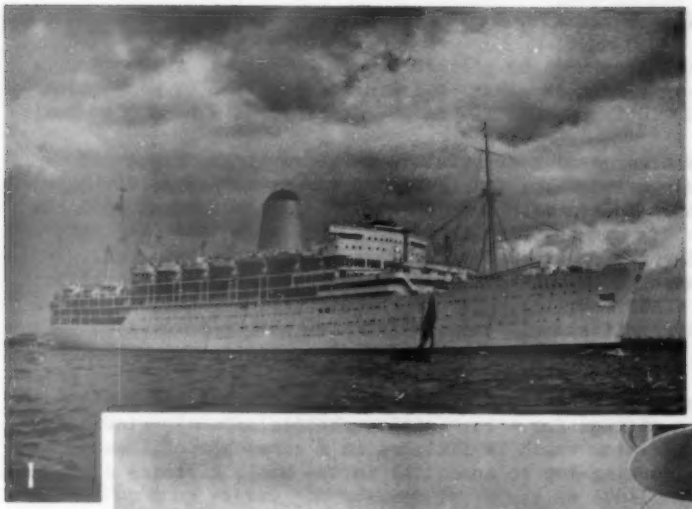
ILLUSTRATIONS OPPOSITE: The elegant "Arcadia", which has been fully air-conditioned, boasts several verandah cabins de luxe, one of which is shown, with air-conditioning grilles on the ceiling. Below is an "M.R" view of the steam-turbine driven, 225 b.h.p. Hall, "Arcton-6" compressor.



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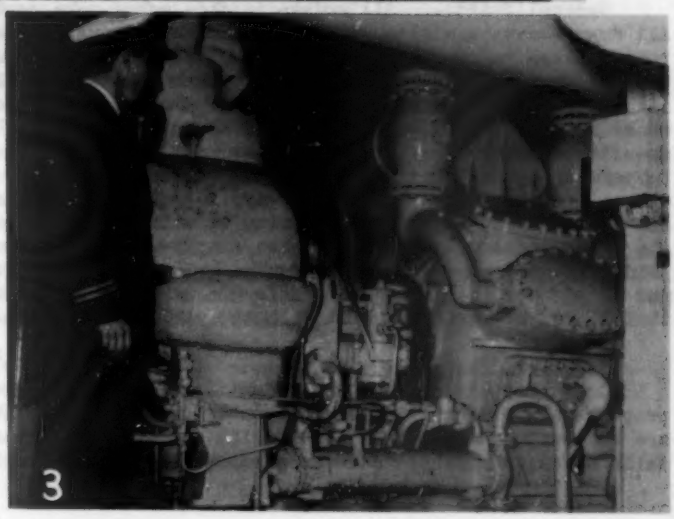

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LIGHTFOOT'S ADD TO THEIR DOMESTIC RANGE

Three new models have been added to the range of refrigerators marketed by the Lightfoot Refrigeration Co. Ltd. for the domestic consumer. These refrigerators are made in West Germany by the Linde organization and represent the latest development in continental design and styling.

L.T. 13·5. This model is intended for the small family, yet has a very large storage capacity in relation to its size, which makes it eminently suitable for use where space limitations prohibit the larger free-standing models. This large capacity to space occupied ratio, is made possible by the small size of the compressor unit and condenser with which this refrigerator is equipped. In appearance the refrigerator embodies all that is most modern. Contemporary lines and pleasing appearance are here combined with first-class functional qualities. The angled shape of the door gives a streamlined look which will add distinction to any kitchen, but the additional depth thus given has been utilized as extra storage for eggs, bottles, butter, cheese, etc. An outstanding feature is the top of the refrigerator which is finished in a scratchproof, heat-resisting plastic which provides the extra working-top so essential in the small kitchens of to-day.

L.H.14. This refrigerator which is of the free-standing type is also for the smaller family and incorporates many of the excellent features of the L.T.13·5 but provides that little extra storage space which is often needed - the shelf capacity being almost 12 sq.ft. The full width freezer compartment is of ample size to take a wide range of frozen foods and is complete with an ice tray which will make 20 ice cubes. The egg racks in the door will hold 16 eggs. There are large butter and cheese compartments and two racks, one for large bottles, the other for holding smaller bottles and cans. A large and very accessible vegetable container is provided in the base of the cabinet. This is made of blue transparent plastic to tone with the blue facings to the cabinet door and enables the housewife to see, at a glance, the contents of the container and exactly where those contents are located.

L.H.18. This model is for the medium-sized family and, like the two smaller models, it is distinguished by the tasteful use of colour inside the cabinet. Again there is a full-width freezer compartment and this has two ice trays, one for making small ice cubes, the other containing individual plastic moulds for making large blocks of ice for long drinks, ice-lollies, etc. These plastic moulds have dimpled bases to prevent spillage in handling. The refrigerator has a shelf area of 18 sq.ft. which is extremely high for the floor space occupied. The three lower grid shelves slide out, giving easy access to the goods placed at the rear, and the top shelf is made in two halves which may be lifted in order to accommodate large packages. The deep-fitted door has storage for 16 eggs in two racks. Below is a separate compartment with single drop door for butter and cheese. Three further racks of varying size will accommodate a range of bottles and cans.

General Points. All models in this range make good use of available space and of colour. All doors have pale blue trim strips and the doors of the butter compartment and freezer compartment are faced in a matching blue. Considerable thought has been devoted to the storing of various types of food in one cabinet, each at their ideal temperatures. As a result there is a large compartment with sealing door for storing frozen foods. The vegetable container is covered by a glass shelf to prevent dehydration of the vegetables. The butter and cheese compartments are sited in the door, and whilst the rest of the door is specially insulated against the outside temperature, the butter and cheese compartments are not, so that the butter can be put in the special dish provided and kept always "spreadable." Cheese is prevented from becoming too cold and can be kept, therefore, in prime condition. Easy cleaning is another important feature of the refrigerators. All models have single-piece interiors so there are no ridges, corners and joints where grease can collect. The grid shelves are plastic enamel covered for wiping clean and all decorative strips lift off. The drip tray beneath the freezer compartment is divided so that it can be easily removed without spillage and mess after defrosting.

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Great Britain's first all-pedestrian shopping centre at Stevenage - for 60,000 to 80,000 people - was officially opened recently by Her Majesty the Queen. In the new town centre there are 7 departmental stores, 27 clothing shops, 14 furniture, hardware and household goods retailers, 16 foods shops and three supermarkets; all the latter are Frigidaire equipped.

"M.R." July 1959

SCOTTISH STORE OPERATORS IN ANNUAL CONCLAVE

Aberdeen has proved its popularity as the venue for the annual meetings of The Scottish Association of Cold Storage and Ice Trades which convened once more in the Imperial Hotel in that city on the 10th ultimo.

In opening the proceedings Mr. James Mackenzie (North British Cold Storage and Ice Co.Ltd.) referred to the very great loss they had sustained in the death of three of their most respected and able members - Mr. Walter Thomson; Mr. Archie MacPherson and Mr. John Kilgour. "Walter, Archie and John served our Association well as members of committees. John Kilgour was our president from 1941 to 1945 during a period when frequent journeys to the south were very necessary so that our Association would be represented at meetings between the Ministry of Food and the cold storage industry." declared the president. "Our three friends gave freely of their time and knowledge and we will remember them with affection and gratitude for their efficiency and good fellowship."

"A definite tribute is due to this Scottish Association of Cold Storage and Ice Trades which has had a real influence in keeping us together during the past 20 years." went on Mr. Mackenzie.

"For many years, the ice manufacturers in Scotland have looked at the age and quality of the trawler fleet with considerable misgivings. The number of new diesel trawlers presently fishing, and on order, has revolutionised the catching side of the fishing industry and it is our responsibility to make certain that we produce ice as cheaply and efficiently as possible. Only the most modern equipment can produce ice at low cost. I am sure we are all delighted to learn that a flake ice plant is on test at Aberdeen.

"For many years we have talked about the benefits of cooling vegetables by the melting of crushed ice and I am now able to tell you that one grower in the East is taking a daily tonnage of ice with the object of removing the atmospheric heat from the vegetables before they are packed and loaded for the market. I remember reading somewhere that this pre-cooling extended the quality and sales appeal in the shops by about 5 days. I understand that fruit deteriorates ten times as quickly at + 80° Fah. as at + 30° Fah. and that immediate pre-cooling is vital to the success of the hydrocooling process.

"Crushed ice is also being used increasingly for the pre-cooling of poultry and turkeys prior to marketing or freezing and undoubtedly the foregoing observations indicate that the ice trade still has an effective part to play in providing quick cooling for highly perishable foodstuffs.

"The rapid expansion of provate cold storage accommodation poses the question - "Are the public cold stores maintaining a leading position in the provision of efficient, economic and hygienic cold storage facilities"?

"When one sees a 400,000 cu.ft. sub-zero air-cooled cold store being constructed in Edinburgh for the storage of ice cream and when our trade and other publications tell us that each "Fairtry" type of freezing trawler is expected to land 600 tons of fresh frozen fillets per month, then one wonders if the established cold stores could not have provided space for this very high-quality traffic. I think it has to be admitted that the demand for -20° Fah. had outstripped the availability of this type of cold storage space in the localities where it is required. The installation of plate freezers aboard the "Fairtry" and their increasing use ashore, must be a pointer that again the future would appear to require more and better packaging and freezing whether for immediate sale or further processing.

"In referring to the use of air-coolers in many of the new cold stores presently under construction for private operators, I must admit I have been seriously perturbed as to why these customers of public cold stores demand direct expansion cooling of cold storage space when storing their products outwith their own cold stores or factories.

"During my first year as your president, I have endeavoured to interest myself in developments which would inevitably effect some of our customers and thereby our own interests as cold store operators and freezers.

"At the works of a manufacturer of refrigerating equipment in the far south, I examined a

unit for the manufacture of blocks of ice by the Rapid Ice Process. The same firm manufactures a brine immersion unit for poultry freezing which I have examined under working conditions. At a recent exhibition of marine engineering equipment in London, I also inspected an ice-making unit at work producing flake ice.

"It is my personal opinion that we must pay immediate and detailed attention to each one of these new refrigeration units because at least one of them is going to affect some of us very soon. As an engineer, I was impressed by the potential savings in space, maintenance costs and manpower necessary to operate each of these items of equipment."

The president also dealt with the freezing of liquid egg (which he thought, in the home produced form, could be handled by the stores for freezing down); the W.F.A.; the Herring Industry Board's new rules and the irradiation of foodstuffs together with a variety of other topics.

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NEW COLD STORES

In 1954 a cold store of about 18,000 cu.ft. was established by Oakley and Watling at Silvertown Way, London, to be held at a temperature of minus 10 degs.F., and the cooling was carried out by direct expansion ammonia grids placed on the ceiling of the room. The plant maintained the temperature automatically.

As a result of satisfactory operation and trading, it was decided to double the capacity of the store by the addition of a second storey over the existing room.

In view of the weight of the direct expansion cooling system, The Lightfoot Refrigeration Company, who installed the plant, recommended that the cooling should be carried out by an air cooler which could be placed at one end of the room where the weight could be largely carried by the outside wall, this system not only saving considerable weight, but also producing a much quicker cooling effect by reason of the rapid movement of the air.

The original refrigerating plant consisted of two compound ammonia compressors, of which one was a standby.

To give the greatest efficiency to the new cooler, it was decided to operate it on the flooded principle and to bring this about, an ammonia separator was placed in the engine room and an ammonia pump drawing from this circulates the liquid ammonia through the cooler in the room above.

The air cooler is of the unit type contained in its own galvanised casing with a fan delivering the air through ducting to the far end of the room.

The plant maintains the temperature automatically by means of a thermostat and defrosting is carried out by the injection of high pressure hot gas from the compressor delivery. The resulting condensate is returned to the low pressure receiver through a high pressure metering float valve and the defrost water is led to the outside through a heated drain.

As this room is situated over an existing insulated room, the floor is uninsulated except for a 5 ft. perimeter which counteracts any heat leakage likely to enter through the floor construction itself. This perimeter is insulated to a thickness of 8" of slab cork and this and the whole floor is covered with 2" of granolithic.

The insulation work was carried out by The Armstrong Cork Company.

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ILLUSTRATIONS OPPOSITE - "M.R." shots taken at the annual meeting of the Scottish Association of Cold Storage and Ice Trades in Aberdeen. Among those whom readers will readily recognize are Mr. James Mackenzie, president; Mr. W.A.P.Milne; Mr. J.H.Dunningham; Mr. D.Knowles; Mr.M.Lawson; Mr. D.H.Swankie; Mr. E.C.Malcolm and Mr. Kenneth Walker, C.A., secretary, all members of the committee. Unfortunately, Mr.A.Ferguson, also on the committee, was not present. Visitors included Mr. E.G.Bundey from London, Dr.& Mrs.C.A.Reay,Torry, Mr.and Mrs.H.R.Lloyd, Cardiff, Mr. and Mrs. T.A.Raymond, London, and Mr. D.T.Lee, London.

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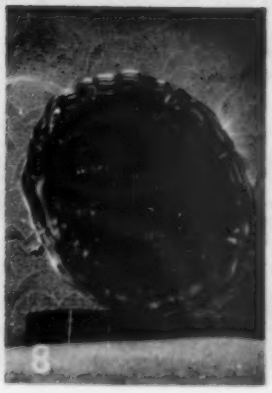

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NEW HUSSMANN CABINETS

In the field of display refrigeration, the introduction of a new range of cases by Hussmann is important news. Specially designed to give maximum capacity and display area on the minimum of floor space, the new "Slimline" cabinets provide the ideal answer for the smaller retailer and others where space is a problem and modernization is essential. There are three cases in the range and between them they cover temperature zones from - 5°F. to 40°F. so that every variety of perishable food is catered for, from ice-cream to milk. All the cases are similar in external appearance. Superior visibility for the goods on display, the extensive highly polished stainless steel trims and the wear resistant front panels which are available either in white, colours or a twin tone effect if so desired.

The "Slimline-L", a zero degree Fahrenheit case, can be adjusted so that ice cream and frozen food can be displayed and stored. It has a capacity of just under 12½ cu.ft.

The "Slimline-M" is a case which can operate in the 26°F. to 30°F. zone and so is ideal for butchers who do a trade in imported meat.

The "Slimline-H" is similar to the "M" except that its use for temperatures ranging from 34°F. upwards renders it possible to provide automatic defrosting without the coil heaters.

The cabinets are priced between £340 and £398.

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INSULATED SPHERE FOR LIQUID AMMONIA

Perhaps the most impressive sight at Fisons Limited's new fertilizer factory, Stanford-le-Hope, is the massive liquid ammonia storage sphere, believed to be the largest insulated vessel of its type in the world and certainly the largest in this country for storage of liquid ammonia. Viewed from a distance it dwarfs the surrounding buildings and with its silver finish presents an aspect reminscent of some space machine - although a closer inspection reveals the twelve tubular steel supporting legs are firmly anchored to concrete bases. The 60' diameter sphere is designed to store 2,000 tons of liquid ammonia at a pressure of 57 lb. per sq. in. at an approximate temperature of 32°F/0°C. In order to protect the contents from sudden temperature changes and consequent changes in pressure an efficient insulation was necessarily required and after due consideration Onazote was finally chosen, the contractors being Onazote Insulation Company Limited. This company specialises in the more critical aspects of low temperature insulation such as this present contract and the recently completed liquid methane unloading line at Canvey Island for the North Thames Gas Board which operates at -160°C. On a contract of this size, scaffolding, along with other problems, presents a considerable outlay in time and material and it was essential that, once completed the insulation should require no further maintenance for many years. The specification, therefore, had to be exacting. 3" thickness of Onazote was used and this was applied in two layers of 1½" so that through contacts could be eliminated as far as possible. The total weight of insulation and plastic bitumen finish is 28 tons and half of this on the lower hemisphere is in suspension. It was, therefore, considered advisable to jacket the entire insulation with galvanised wire netting, all edges being stitched firmly together and, as an additional fixing medium, treated timber blocks 3" deep were bolted to prepared lugs and, after the insulation had been applied, the wire netting was stapled to these. To minimise surface cracking in the plastic bitumen glass scrim cloth was embedded between the two dressings and the final finish was two coats of aluminium paint.

Whessoe Limited were responsible for the construction of this sphere.

A.G.OWEN.

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ILLUSTRATIONS OPPOSITE - 1. The storage sphere for liquid ammonia under construction.
2 & 3. At the British Electrical Power Convention at Torquay last month - Col. R.A.Fanshawe and Mr. S.A.Grummitt, R. & A. Main Ltd., on their stand; Mr. E.G.Rowledge, senior director, Prestcold, and Mrs. Rowledge.
4. The completed, insulated sphere described on the opposite page.

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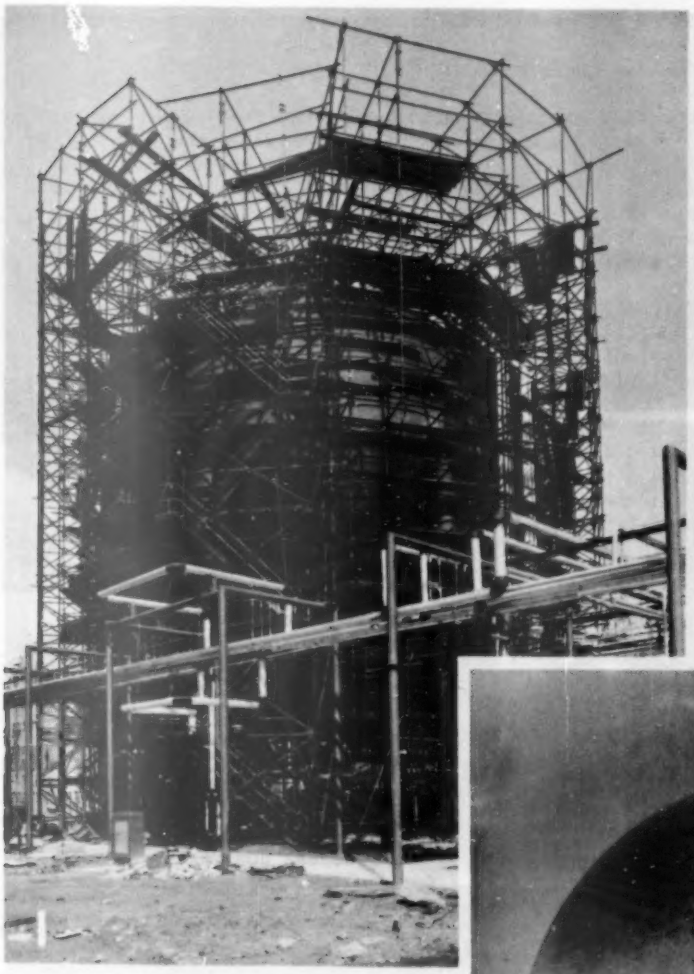

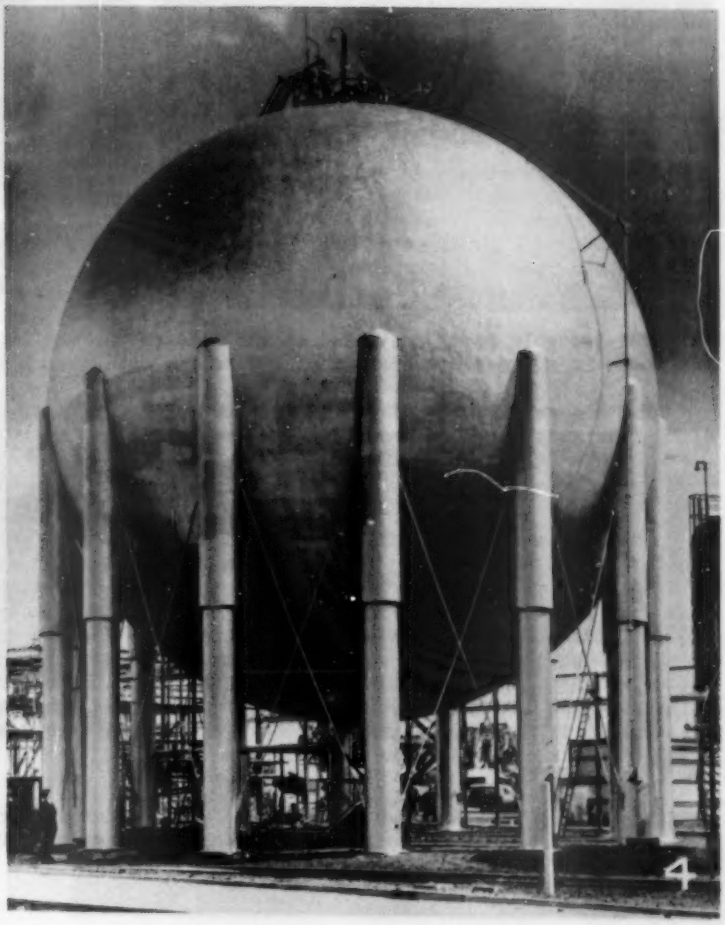

SELF-SERVICE WITH A DIFFERENCE

By a Special Correspondent.

With the transformation of their Deansgate, Manchester branch, MacFisheries, while recognizing the impact of self-service on the housewife's shopping habits, have set a new standard in the retailing of fresh foods by what Mr. R.T.Clack, managing director, describes as traditional methods. This remarkably transformed store, in which refrigeration plays an important part in ensuring presentation of the foods in fresh condition, is traditional in one sense only. It provides a personal service, with a staff of from 40 to 50 behind the counters and cabinets, and it combines that personal service with the convenience and efficiency of the supermarket.

In layout, with each department individually designed to meet the display and serving requirements of its own merchandise, it is completely non-traditional. Over each specialized department is a false ceiling of distinctive colour, incorporating lighting sources, and from which are suspended illuminated signs identifying the various sections.

Of the many original features the butchery department is probably the most impressive, with its 18 ft. long run of continuous refrigerated display of meat provided by a unique arrangement of three joined-up Hussmann cabinets. Instead of being fitted flush in an uninterrupted straight line of display, as is the frequent practice to-day, the three cabinets, set at a broad angle to each other, are mitred together to form three sides of what if it were continued would be an octagon. Their combined display area is 41.9 sq.ft., and they are held at a temperature of 28/32°F.

Immediately adjoining this meat department is a 6 ft. long Hussmann cabinet, held at -5°F. for the display of frozen foods, and there is a similar cabinet terminating the line of grocery and provision counters at the back of the shop. Each of these low-temperature cabinets provides 15.3 cu.ft. of display area.

On the left-hand side of the shop, between the fish and delicatessen sections, there is a 9 ft. long Hussmann display cabinet for poultry. This has a temperature of 34°- 37°F. and provides a display area of 21½ sq. ft.

The cold-rooms are conveniently located in relation to the selling area and to the preparing rooms, respectively. The group of four at the extreme back of the premises comprises, respectively: (A) a cold-room of 320 cu.ft. capacity, held at 32°F., for poultry, (B) a 400 cu.ft. chamber held at 0°F. for frozen foods, (C) and (D) both of which open off the butchers' preparing room and are used for meat, one of 360 capacity, held at 18°F. and the other of 320 cu.ft. capacity held at 32°F. These grouped coldrooms were all built by the Armstrong Cork Co.Ltd.

The two cold rooms installed at the side of the selling departments are both by Sterne's, and there is a Prestcold chamber of 200 cu.ft. capacity held at 33-37° for poultry in the basement.

For the ventilation of the store, for which Wood's of Colchester were responsible, there are eight fans over the shop-front and one reversible fan at the back. There are also extract fans over the meat and fish sections.

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PRESTCOLD SHOWROOM AT LEICESTER

What is in effect a brand new showroom has recently been completed in Narborough Road, one of the main roads of Leicester, presenting an attractive and eye-catching display to the passer-by. This showroom is the first branch of Prestcold (Midlands) Limited to be modernised in this way, so that they will have the style and appeal of the fine principal showroom at Smithfield House, Digbeth, Birmingham. Through the thirty feet plate glass frontage and doors most of the Prestcold models - both domestic and commercial - are seen displayed, forming an attractive symphony of colour with the whites and creams harmonising with the modernistic decor. Overhead a blue ceiling with concealed lighting provides facilities for spotlighting the various models and the combination of lighting and background have made the showroom something of a landmark in the Leicester area. The branch supervisor is Mr. Norman Johnson.

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ILLUSTRATIONS OPPOSITE: 1 and 2, views of the new MacFisheries branch in Deansgate, Manchester: 3 and 4, Exterior and interior of Prestcold's new showroom in Leicester.

"M.R." July 1959

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R. S. A. NEWS.

Enrolments and enquiries for enrolment alone have proved conclusively the need for an association such as ours, writes the secretary, Mr. M.R.Hadrys.

Among recent memberships are block entries from the staffs of Hays Wharf Ltd., and Gratte Bros. Ltd., both of London. A renewal membership from Mr. J.L.Johnson now in Kuwait and an application from Ceylon show that interest in the R.S.A. has already spread far afield.

That interest has been aroused is shown not only by the enquiries and requests for application forms from abroad, but by letters of goodwill from both the Australian and New Zealand Institutes of Refrigeration and Refrigeration Service Engineers. Their deep interest in our activities and wish to renew old associations is very gratifying. For the benefit of those who may be able to make the journey, the Australian Institute of Refrigeration Service Engineers have invited as their guests any members who can attend their annual convention at Melbourne during the first week in August.

The committee is now further strengthened with the practical experience and knowledge of Mr. Steggel, service manager, The Lightfoot Refrigeration Co. Ltd., who is now a member. To ensure the furtherance of the educational course, a sub-committee is to be formed to deal with this subject.

Many members unable to attend the Tuesday meetings will be pleased to know of the alteration for next winter's session. As for last winter, the meeting place this winter will be The Junior Institution of Engineers, 14, Rochester Row, Westminster, London, S.W.1, and the time as before, 7.30 p.m. The dates are as follows:- September 30,1959, October 28,1959, November 25, 1959, December 30, 1959, January 27, 1960, February 24, 1960, March 30, 1960, April 27, 1960.

As before, a list of interesting subjects for lectures is being devised for the coming session and adhering to our policy of interesting all members, will cover a wide field.

A brief review of the past session shows that the Association is proceeding steadily forward with the continued support from the entire industry. Both new and renewed membership is increasing and active support from the industry is continued by compliance to requests for lecturers in the coming season. The committee is duly grateful for this generous assistance that enables members to obtain first hand knowledge from the people who know their subject. Furthermore, it must not be forgotten that they give this assistance in their own time and at no little trouble.

The Institute of Refrigeration's offer of assistance when needed and reaffiliation to the B.R.A. are further proofs of the R.S.A's standing - evidence of good progress since that first meeting last autumn when the reconstitution of the R.S.A. was debated.

Referring to increased membership, it is hoped that the winter will see the establishment of the first branches in this country.

The competition for a new badge for the R.S.A. closed on June 30.

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OBITUARY

Mr. John Kilgour

We much regret to have to record the passing of Mr. John Kilgour (New Standard Cold Storage (Aberdeen) Ltd.,) in May. Mr. Kilgour took a leading part in the formation of the Scottish Association of Cold Storage & Ice Trades in 1940 and was its president for the greater part of the difficult war period. In addition Mr. Kilgour served for many years on the committee and his wise counsel and enthusiasm for the Association and all its affairs will be greatly missed. He was to have been appointed honorary president of the Association at the forthcoming annual general meeting of members held this month and his outstanding services to it were to have been recognized in tangible form by the presentation to him of a silver salver on which the names of his many friends in the Association are engraved and by whom he is deeply mourned.

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NEW GRIMSBY STORE - Northern Cold Storage Limited, an independent concern, has announced the opening of a new single-storey cold store in Ladysmith Road, Grimsby. The building three views of which are shown on the opposite page, is well outside the congested fishing dock area, yet only 10-15 minutes from the quayside. Storage temperatures as low as -20°F. are available.

ALL SET FOR THE COPENHAGEN GATHERING

By the time that these lines are read, the great 10th International Congress of Refrigeration in Copenhagen will be only five weeks distant.

The papers committee has now virtually finished its task, the results of its labours being the publication of some 350 papers from 30 countries, of which 194 are from: France (50), the United Kingdom (44), U.S.A. (35), U.S.S.R. (34), and Germany (31).

The following donor members have been signed on from 15 countries (there are, of course, several other grades of membership):-

Argentine
Danfoss (Argentina)
Austria
Wiener Städtische Lager- und Kühlhaus,G.m.b.H., (Wien.
Belgium
Refribel, Bruxelles.
S.A.des Ateliers B. Lebrun, Nimy.
Brazil
Sindicato da Indústria do Frio, São Paulo.
Canada
Vancouver Ice & Cold Stores Ltd.,Vancouver.
Danfoss (Canada)
Denmark
A/S Atlas, København (5)
Nordjydsk Cold Stores A/S, Aalborg
Det jydske Kølehus og Isværk"Cold Stores"A/S, Aarhus.
Sydjydsk Cold Stores A/S, Kolding.
A/S Fyns Cold Stores, Odense.
A/S Cold Stores Holding Selskab, København.
Det danske Kolehus"Cold Stores"A/S,København(2)
Carlsberg Breweries, København (2)
Holger Andreasen, København
A/S Tuborg Breweries, Hellerup (2)
Krystalisværket A/S, København.
Brodrene Grem, Vojens (5)
A/S Beauvais, København
A/S Thomas Ths. Sabroe, Aarhus (5)
G.W.Ventilation, København
De forenede Isværker A/S, Premier Is,Esbjerg.
Statens Forsøgsstation,Blangstedgaard,Odense.
Europa A/S, Esbjerg
Danfoss, Nordborg
"Evercold"Dansk Køleindustri A/S, København.
Nordisk Kulsyrefabrik, Valby.
Det forenede Dampskibs-Selskab A/S, København.
Aktieselskabet Rockwool, København.
France
Société d'Etudes et des Réalisations Frigorifiques, Paris.
Société Francaise de Transports et Entrepôts Frigorifiques, Paris.
Entrepôts Frigorifiques Lyonnais, Lyon.
Association Francaise de Froid, Paris
Danfoss (France)
France
Chambre Syndicale Nationale des Constructeurs de Matériel Frigorifiques, Paris.
Docks Frigorifiques du Havre, Le Havre
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ABSTRACTS

The following are abstracts from the 350 papers to be delivered in the nine commissions (they will be continued in our August issue):-

COMMISSION I - Since this commission deals with the rather specialized field of ultra low temperatures - of chief interest to physicists and research workers - we are publishing abstracts relating to this section at the end of this feature which will be continued in future issues.

COMMISSION II - TRANSFER OF HEAT, INSULATING MATERIALS, THERMAL PROPERTIES OF MATERIALS, INSTRUMENTATION, ETC.

Insulating materials. Recent developments in the uses of polyurethane rigid foams as heat insulating materials. H.A.Hampton and R.Hurd, Imperial Chemical Industries Ltd. Manchester. (United Kingdom). Data is presented showing that with certain polyisocyanates, foams can be made in situ without involving any substantial toxicity hazard. An account is given of the high speed of application of insulation using the in situ foaming technique.

Some Observations of the coefficient of the thermal expansion of polystyrene foams at low temperature. L.Vahl. Laboratorium voor Koeltechniek en Droogtechniek der Technische Hogeschool, Delft (Netherlands.). The course of the thermal expansion of samples isolation-plates(polystyrene foam) shows a hysterysis. It can be proved that this is due to the differences in the coefficient of expansion of the network, consisting of polystyrene, and of the air, which is present in the closed holes of the polystyrene foam.

Low temperature properties of expanded ebonite. A.Cooper (United Kingdom). Following an introduction describing expanded ebonite and its place among cellular polymers, an illustrated description giving its general physical and chemical properties is outlined. The low temperature tests on expanded ebonite will then be dealt with under separate sub-headings such as thermal conductivity, compression strength, tensile strength, impact strength and the coefficient of linear contraction.

Measurements of adsorption isotherms of cork. A.Van Itterbeek, W.Van Dael and H.Kyncke. Institute of Low Temperatures and Applied Physics, Louvain (Belgium). To investigate the physical properties of insulating materials, the AA. developed an experimental method of determining adsorption isotherm. As absorbing gases, they use carbon dioxide or methyl chloride.

Heat insulator for rapidly cooled low temperature chambers. J. Nagaoka. Tokyo University of Fisheries, Tokyo (Japan). Low temperature chambers for treatment of metals or testing of airborne instruments are often cooled very rapidly. In this paper the various heat insulators used in the low temperature chamber, such as cork, expanded polystyrene, silica aerogel and expanded ebonite are compared theoretically and experimentally.

Measurement of Thermal characteristics of insulating materials. The probe-method for measuring heat conduction. E.M.F.Van der Held and B.H.Vos. Central Technical Institute, T.N.O., Delft (Netherlands). A description is given of the A-probe as developed in the T.N.O.laboratory. Some experiments in the laboratory and in practice are given for building materials and building constructions, and the results are discussed.

Single plate apparatus for low temperature thermal conductivity tests. I.A.Black, A.A.Fowle and P.E.Glaser. Arthur D.Little Inc. (U.S.A). A new test apparatus for the purpose of measuring the mean thermal conductivity in the temperature range from 300°K to liquid nitrogen or liquid hydrogen temperatures for a variety of insulating materials has been developed. Tests have been conducted with commercially available powder insulation (Cab-O-Sil, Perlite, Santocel).

Radiation inside thermal insulating materials. A. Rasi. Padua (Italy). This is a report of tests carried out on an apparatus for the investigation of the heat transfer coefficient in vacuum, showing the amount of heat transferred by radiation in the overall process of conduction.

Heat and Mass Transfer Through Insulating Materials. On the influence of free convection in insulated, vertical walls. G.Lorentzen and E.Brendeng. Norges Tekniske Hogskole, Trondheim(Norway). Free, thermal convection may add considerably to the heat leakage through the walls of a cold storage room, depending on the resistance to air flow of the insulation. Recent experience has shown that free convection occurs frequently in practice, often with disastrous results.

Combined heat and moisture flow. N.B.Hutcheon. Division of Building Research, National

Research Council, Ottawa (Canada). The paper presents for critical comment a review of a Canadian programme of research extending over twelve years, and the philosophy which has developed concurrently with it.

Testing facility for measuring vapour transmission through insulation and other building materials. H.M.Hendrickson. University of Washington, Seattle (U.S.A.). This paper describes a facility for more accurately determining vapour transmissions for various temperature and humidity gradients. The basic unit was a guarded hot box, ASTM designation C 236-54 T, normally used for heat transmission studies.

Graphic method for the determination of the vapour pressure within a wall and of the mass rate of water vapour diffusing through walls consisting of several layers. H.Glaser. Mase-Planck-Institut fur Stromungsforschung, Gottingen, (Germany). In each individual layer of a wall the pressure of the diffusing water vapour decreases linearly, when plotted against the depth of the wall. The vapour pressure gradient then differs from layer to layer according to the diffusional resistance encountered.

The influence of the capillary suction effect on the infiltration of moisture in sheet insulations of asphalt impregnated paper. M.Backstrom. Stockholm (Sweden). Tests made in 1951 by David Ahlquist with sections of samply walls exposed on the warm side to a temperature of about 30°C and 37% relative humidity and on the cold side to -18 C and 90% relative humidity showed that an insulation made of asphalt impregnated paper absorbed only about a fiftieth of the water quantity that during the same time accumulated in a mineral fiber insulation of the same thickness which on the warm side was protected by asphalt impregnated paper.

Short duration test of insulated cold stores. A.C.Levinsen. Thomas Ths Sabroe and Co., Aarhus (Denmark). The fluctuation in the outside temperature influences test results, and this must be taken in consideration when evaluating the results of a test of comparatively short duration.

Modification of load calculations required when using reflective insulation. G.F.Sainsbury. Seattle (U.S.A.). Reflective insulation and other recently developed low-density insulators have little heat storage capacity. Satisfactory use of these materials required some investigation into maximum heat transmission rates that may be encountered in a given application.

Effect of solar radiation on heat transmission through insulated walls. F.Rondla, Research Insitute of Refrigeration and Food Engineering, Praha (Czecoslovakia). For more exact determination of conditions in a wall during solar irradiation measurements of the effect of solar radiation on heat insulation were started at the Institute of Refrigeration and Food Engineering, Praha, in 1958. Last year the work on the equipment installed was focused on determining the heat and temperature conditions in insulated walls of refrigerated road vehicles.

Heat transfer in heat exchangers. New measurements of the thermal conductivities of several liquid refrigerants of the fluorochloro derivative types. R.W.Powell and A.R.Challoner. National Physical Laboratory, Teddington, Middlesex (United Kingdom). A guarded hot-plate apparatus is described and used for thermal conductivity determinations on several fluorochloro derivatives of methane and ethane when in the liquid phase. The new values are compared with those of previous workers.

Heat transfer to fluids in laminar flow inside tubes with heating or cooling jackets. H.D. Baehr. Technische Universitat, Berlin (Germany). Analytical solutions can be found for temperature distribution in a medium flowing in streamline motion because in this case a problem of heat conduction has to be solved.

Heat transfer and flow patterns for "Freon-12" evaporating in horizontal tubes. P.Worsoe-Schmidt. Danmarks Tekniske Hojskole, Koleteknisk Forskningsinstitut (Denmark). Measurements of heat transfer coefficients in an experimental horizontal-tube evaporator, and visual observations of the corresponding two-phase flow in a similar glass-tube evaporator, have revealed new aspects of heat transfer with evaporation.

Heat transfer and liquid circulation in a flooded evaporator. I. Lorentzen.A/S Atlas Maskinfabrik, Copenhagen (Denmark). The paper describes an experimental brine cooler for studies of heat transfer and NH_3 liquid circulation. The cooler is of the flooded type with the refrigerant circulating in the pipe system by natural convection.

New equations for heat transfer by free or forced convection. H.Hausen. Technischen Hochschule Hannover (Germany). For the calculation of heat transfer by free convection, several equations are known which, however, do not cover the whole range of the Gr.Pr.group or are too complicated for practical purposes. Therefore a new equation will be proposed, which is relatively simple and is in good agreement with nearly all experimental values. (to be contd.)

The following abstracts are to appear later:- Commission III - Machinery and Air-conditioning plants; IV - Application of refrigeration to foodstuffs and agricultural produce; V - Cold stores and ice-making plants; VI - Applications of refrigeration excluding foodstuffs and agricultural produce; VII - Refrigerated transport by land and by air; VIII- Refrigerated transport by water; IX - Education.

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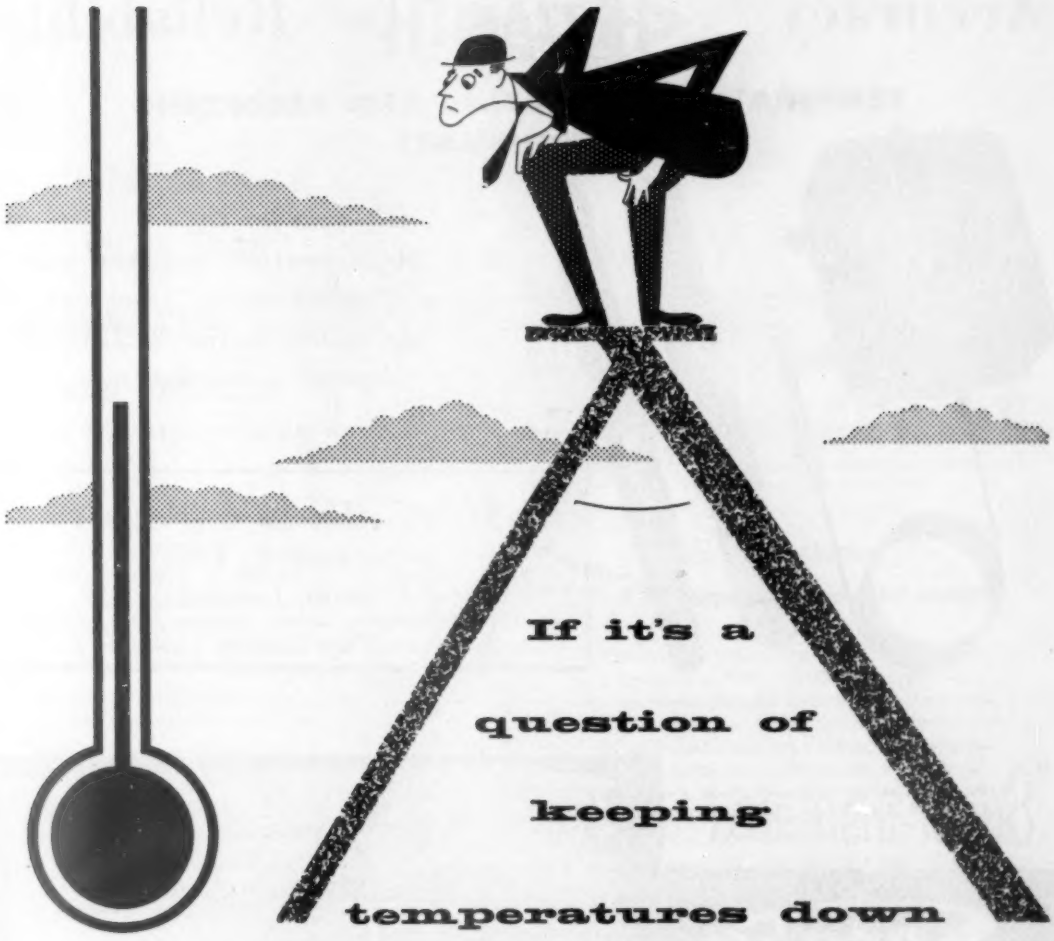

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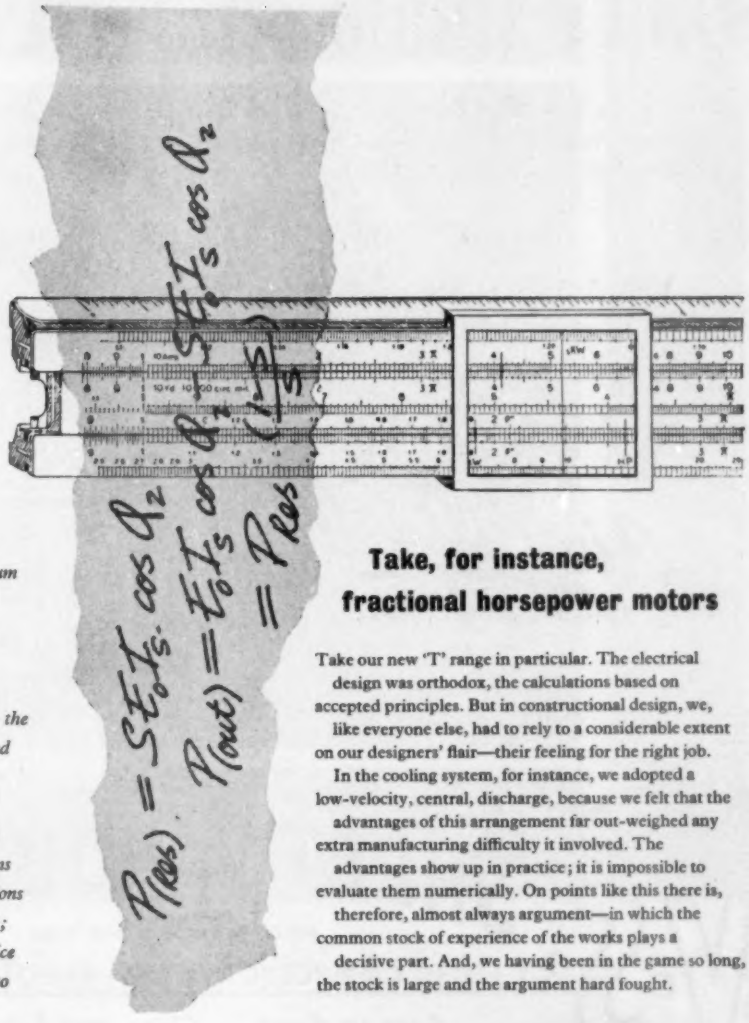

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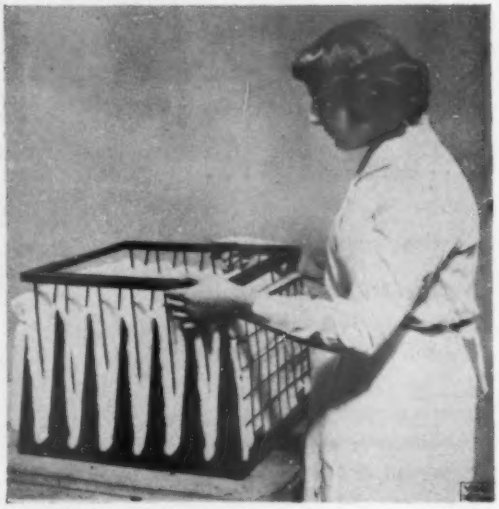

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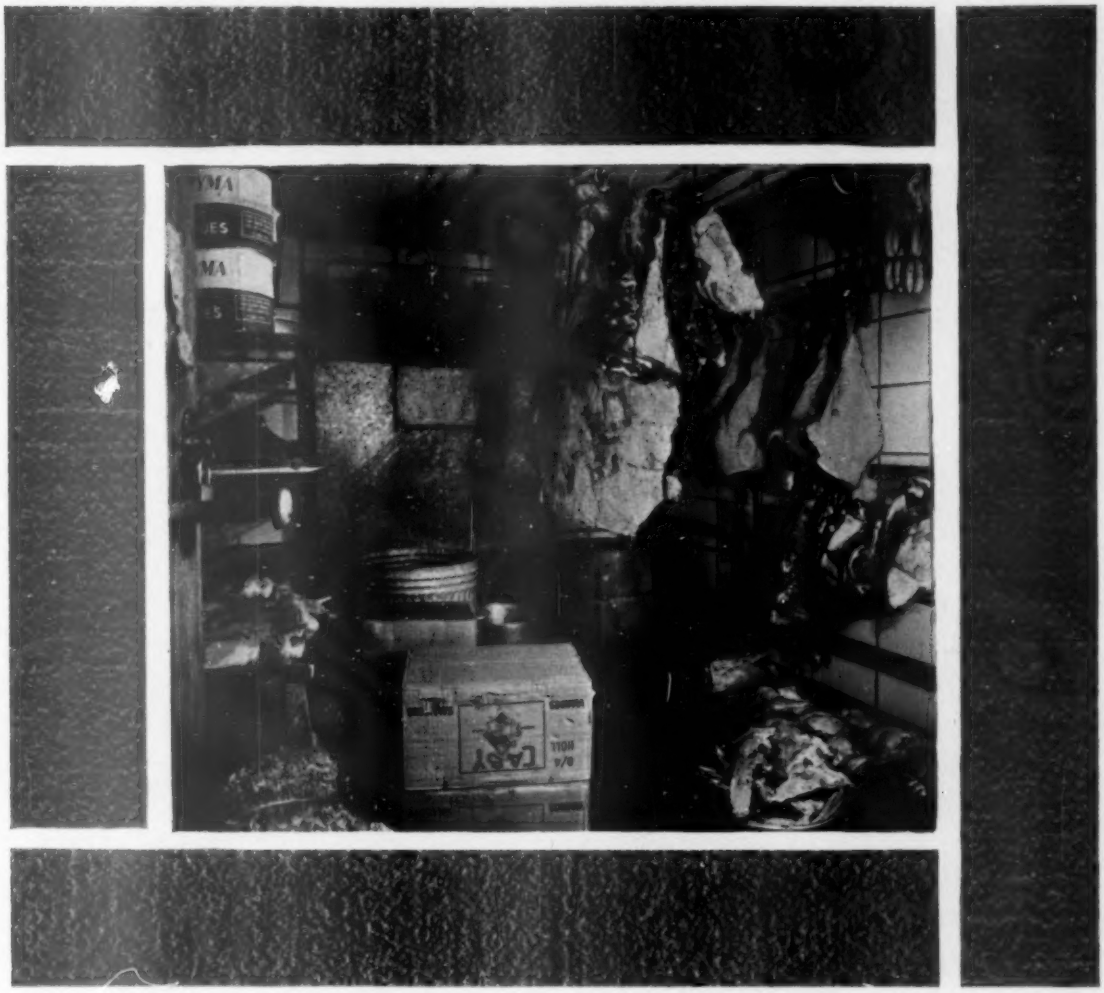

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